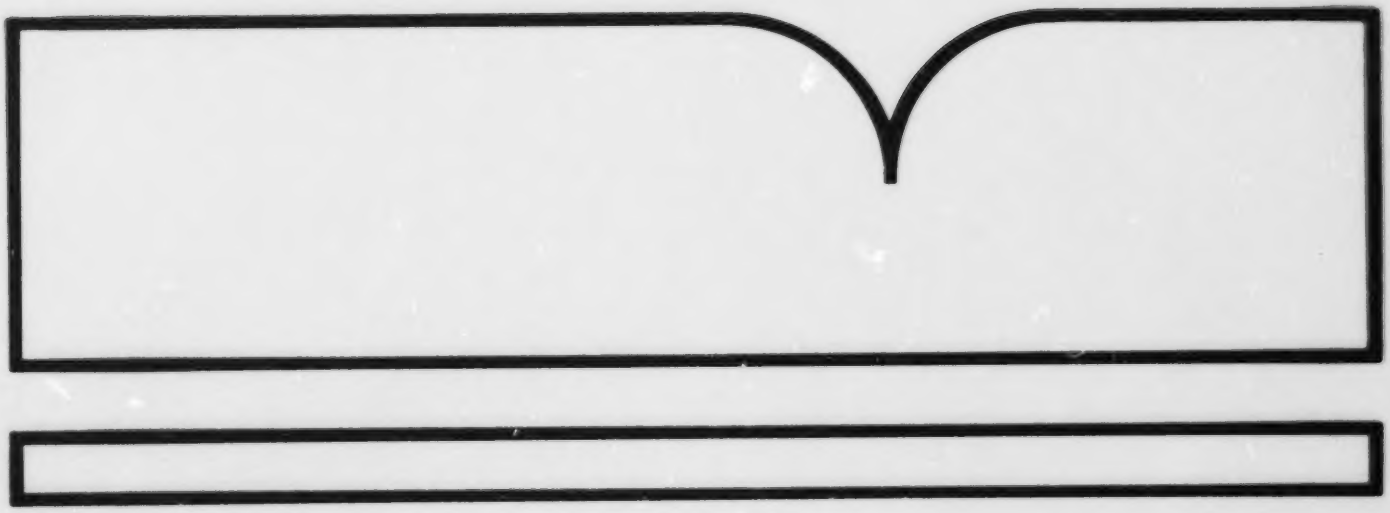
PB86-133865

Superfund Record of Decision (EPA Region 9) Celtor Chemical Works Site, Hoopa, California (Second Remedial Action), September 1985

(U.S.) Environmental Protection Agency
Washington, DC

30 Sep 85



U.S. Department of Commerce
National Technical Information Service
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United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R09-85/009
September 1985

PB86-133865

EPA

Superfund Record of Decision:

Celtor Chemical, CA
(Second Remedial Action, 09/30/85)

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15. SUPPLEMENTARY NOTES

16. ABSTRACT

The Celtor Chemical Works site consists of approximately 2.5 acres, and is located in the northern end of the Hoopa Valley in Humboldt County, CA. The Hoopa Valley Indian Tribe is the owner of the Celtor site. The Tribe leased the land in 1958 to the Celtor Chemical Corporation which processed sulfide ore for copper, zinc, and precious metal extraction. In June 1962, the company was delinquent in its royalty payments to the Hoopa Valley Indian Tribe and as a result, abandoned the site. Mine tailings generated from the milling operations were left onsite. These tailings, along with nonspecific releases of processed ore, are believed to be the cause of the acidic surface water runoff and elevated metals concentrations in the soils throughout the site. In addition, the tailings may have caused the numerous fish kills for which the California Department of Fish and Game cited the Celtor Chemical Corporation.

Initial remedial actions were implemented at the site in October 1983, and included excavation and offsite disposal of all visibly contaminated material. This material included all tailings, non-concrete structures, and a portion of the pasture adjacent to the site. The selected alternative for the second remedial action includes excavation and offsite disposal of all soils contaminated above site-specific action levels at a RCRA-approved hazardous waste disposal facility. Action levels for contaminants in soil were based primarily on the acceptable range of contaminant levels in soil
(see separate sheet)

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Record of Decision Celtor Chemical, CA (Second Remedial Action) Contaminated Media: soil, sw Key contaminants: cadmium, heavy metals, arsenic		

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Abstract - continued

as derived from the EPA National Ambient Water Quality Criteria. These site-specific action levels are: arsenic 100 mg/kg; cadmium 25 mg/kg; copper 2,500 mg/kg; lead 500 mg/kg; and zinc 5,000 mg/kg. Total capital cost is estimated to be $3,065,338 and O&M costs are estimated to be $7,000 for an initial one year period of grounds maintenance.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE September 30, 1985

SUBJECT Record of Decision for Remedial Action at the Celtor Chemical Works Superfund Site

FROM Harry Seraydarian
Director, Toxics and Waste Management Division

TO Judith E. Ayres
Regional Administrator

A Record of Decision to select a remedial action for the Celtor Chemical Works site is attached for your signature. Also attached are the briefing documents describing the selection process and the basis for our determination that excavation and off-site disposal is the most cost-effective remedial action for the site.

As you know, EPA Headquarters has been delegating the authority to sign certain Records of Decision for remedial actions from the Assistant Administrator for Solid Waste and Emergency Response to the Regional Administrator. The authority to sign this Record of Decision was delegated to you on June 17, 1985 in the third Remedy Delegation Report.

The Record of Decision for the Celtor Chemical Works site is a fourth quarter, FY-85, SPMS commitment for Region 9. However, due to the current Superfund slowdown initiated by Headquarters in August, 1985, funding for the remedial design has been withdrawn pending CERCLA reauthorization.

Upon your signature, and pending available funding, the U.S. Army Corps of Engineers will be given authorization to begin design of the selected remedy. Provided we obtain funding in October, 1985, we expect construction to begin in April, 1986 and to be completed by July, 1986, at which time the site will be eligible for delisting from the National Priorities List.

Based on the Remedial Investigation Report, the Feasibility Study Report, and the attached briefing documents, I request that you sign the Record of Decision selecting excavation and off-site disposal as the cost-effective remedial action for the Celtor Chemical Works site. We have coordinated this Record of Decision package with EPA Headquarters and the State of California and we have received concurrence from Region 9's Office of Regional Counsel, Water Management Division, and Air Management Division. I am available to discuss this matter in more detail if you have any questions concerning the attached Record of Decision package.

Attachment

EPA Form 1320-6 (Rev. 3-76)

RECORD OF DECISION
Remedial Alternative Selection

SITE: Celtor Chemical Works, Hoopa, California

DOCUMENTS REVIEWED

My decision is primarily based on the following documents that describe the cost-effectiveness of remedial alternatives for the Celtor Chemical Works:

- Celtor Chemical Works Remedial Investigation
- Celtor Chemical Works Feasibility Study
- Summary of Remedial Alternative Selection
- Community Relations Responsiveness Summary

DESCRIPTION OF SELECTED REMEDY

- Excavation and off-site disposal of all soils contaminated above site-specific action levels at a RCRA-approved hazardous waste disposal facility.

DECLARATIONS

Consistent with the Comprehensive Environmental Response Compensation, and Liability Act of 1980 (CERCLA), and the National Oil and Hazardous Substances Contingency Plan (40 C.F.R. Part 300), I have determined that excavation and off-site disposal of all soils contaminated above site-specific action levels at the Celtor Chemical Works is a cost-effective remedy which provides adequate protection of public health, welfare, and the environment. The State of California agrees with the selected alternative.

The remedial action I have chosen will require future operation and maintenance to ensure its continued effectiveness. These operations and maintenance activities are part of the approved action and are eligible for Trust Fund monies for a period of one year.

I have also determined that the remedial action selected is appropriate when balanced against the availability of Trust Fund monies for use at other sites. Finally, the off-site transport and secure disposition of the hazardous substances is more cost-effective than other remedial actions and is necessary to protect public health, welfare and the environment.

9.30.85
DATE

John Wise
for JUDITH E. AYRES
Regional Administrator
EPA Region 9

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

CELTOR CHEMICAL WORKS
HOOPA, CALIFORNIA

September 30, 1985

Prepared by Nicholas Morgan
Federal Response Section, Superfund Programs Branch
Toxics and Waste Management Division
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215 Fremont Street
San Francisco, California 94105

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SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

CELTOR CHEMICAL WORKS
HOOPA, CALIFORNIA

I. SITE LOCATION AND DESCRIPTION

The Celtor Chemical Works site is located in the northern end of the Hoopa Valley in Humboldt County, California, (see Figure 1). The 2.5 acre site is on reservation land of the Hoopa Valley Indian Tribe, about 2 miles north of the town of Hoopa. The main features of the site are the plantsite, a privately owned pasture used for livestock grazing to the west of the plantsite, and a shallow gully that runs northward from the plantsite to the Trinity River (see Figure 2). Sulfide ores were hauled to the Celtor Mill from the nearby Copper Bluff mine for copper, zinc, and precious metal extraction. The plantsite currently contains a number of concrete walls and slab floors as remnants of the former ore processing operations.

Surrounding the mill are bare to partially vegetated slopes that consist of native soil contaminated by ore and tailings. Dirt roads cross the site, and a gravel fishing-access road passes through the lower (western) part of the plantsite area separating the plantsite from the pasture. The grass covered pasture, located below and west of the fishing-access road and the plantsite, is used to graze cattle. The 500 foot long gully, which runs to the north of the plantsite, is heavily wooded and contains thick brush. This gully discharges into the Trinity River, which, in this area, is classified as a scenic river area under the National Wild and Scenic River System. The Trinity is also considered an important fish resource, including salmon and trout spawning grounds.

In December, 1964 the maximum historic flood for this area was recorded. United States Geological Survey (USGS) and the United States Army Corps of Engineers (USACE) records classify the 1964 flood as greater than a 100-year event. Aerial photographs, discussions with local residents, and a high water mark indicate that in the site area the flood reached a height of 321 feet above mean sea level. The lowest elevation of the plantsite is 330 feet. Thus, all areas lower than the plantsite, such as the pasture, at elevation 320 feet, and all of the gully, may be impacted by a 100-year flood.

The predominant water bearing aquifer beneath the site is a three to five foot thick bed of sandy gravel which rests atop relatively impermeable unweathered phyllite bedrock. This highly permeable and transmissive aquifer is located between 20 feet (at the plantsite) and 60 feet (in the middle of the gully) below the ground surface. A substantial amount of water, perhaps greater than 10 cubic feet per second, flows in this aquifer in a northerly direction into the Trinity River.

Figure 1

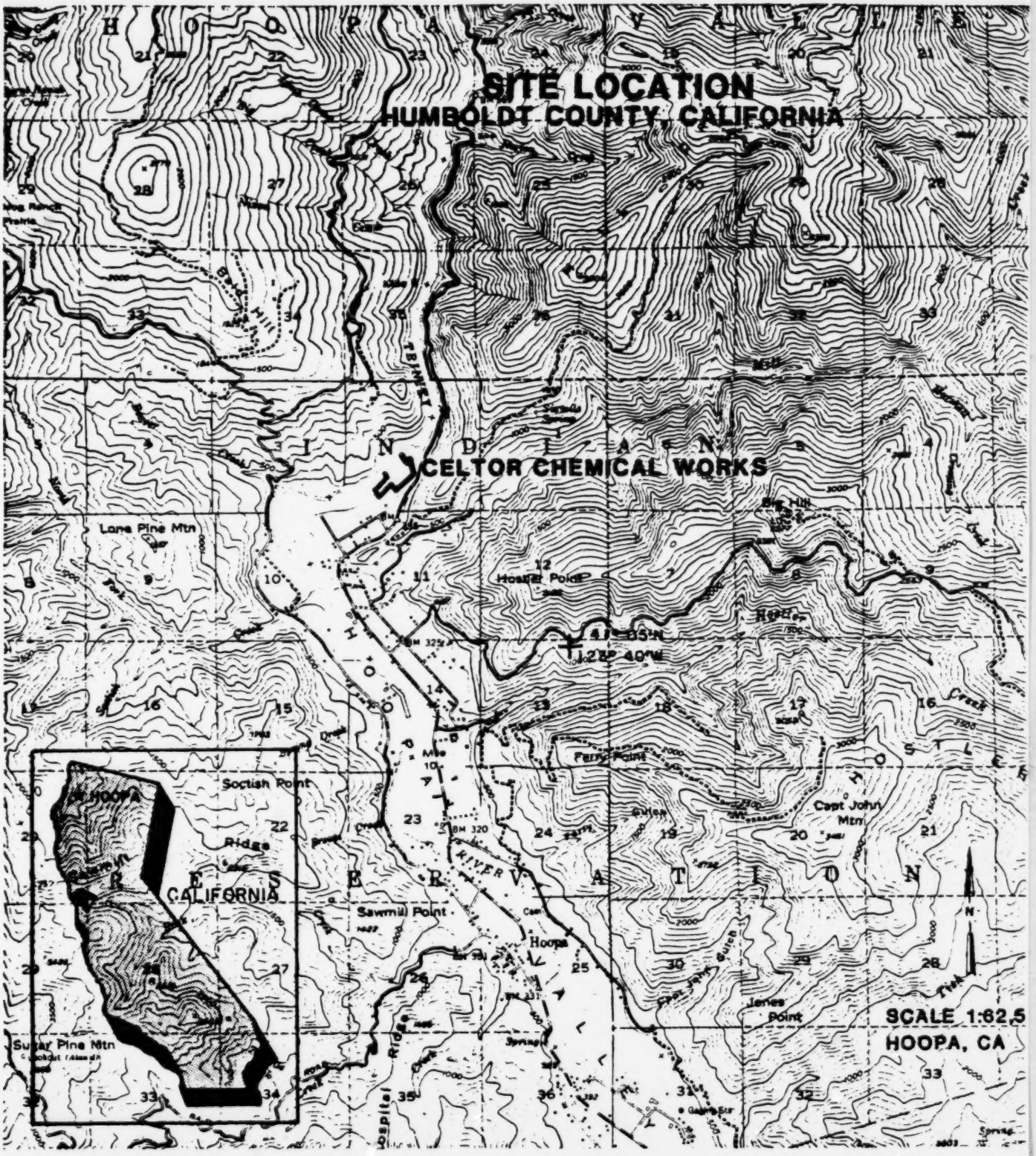
SITE LOCATION
HUMBOLDT COUNTY, CALIFORNIA
CELTOR CHEMICAL WORKS
HOOPA VALLEY INDIAN RESERVATION
Lone Pine Mtn
Hostler Point
Ferry Point
Capt John Mtn
Scotish Point
Ridge
CALIFORNIA
Sawmill Point
Hoopa
Jones Point
Sugar Pine Mtn
SCALE 1:62,5
HOOPA, CA

Figure 2

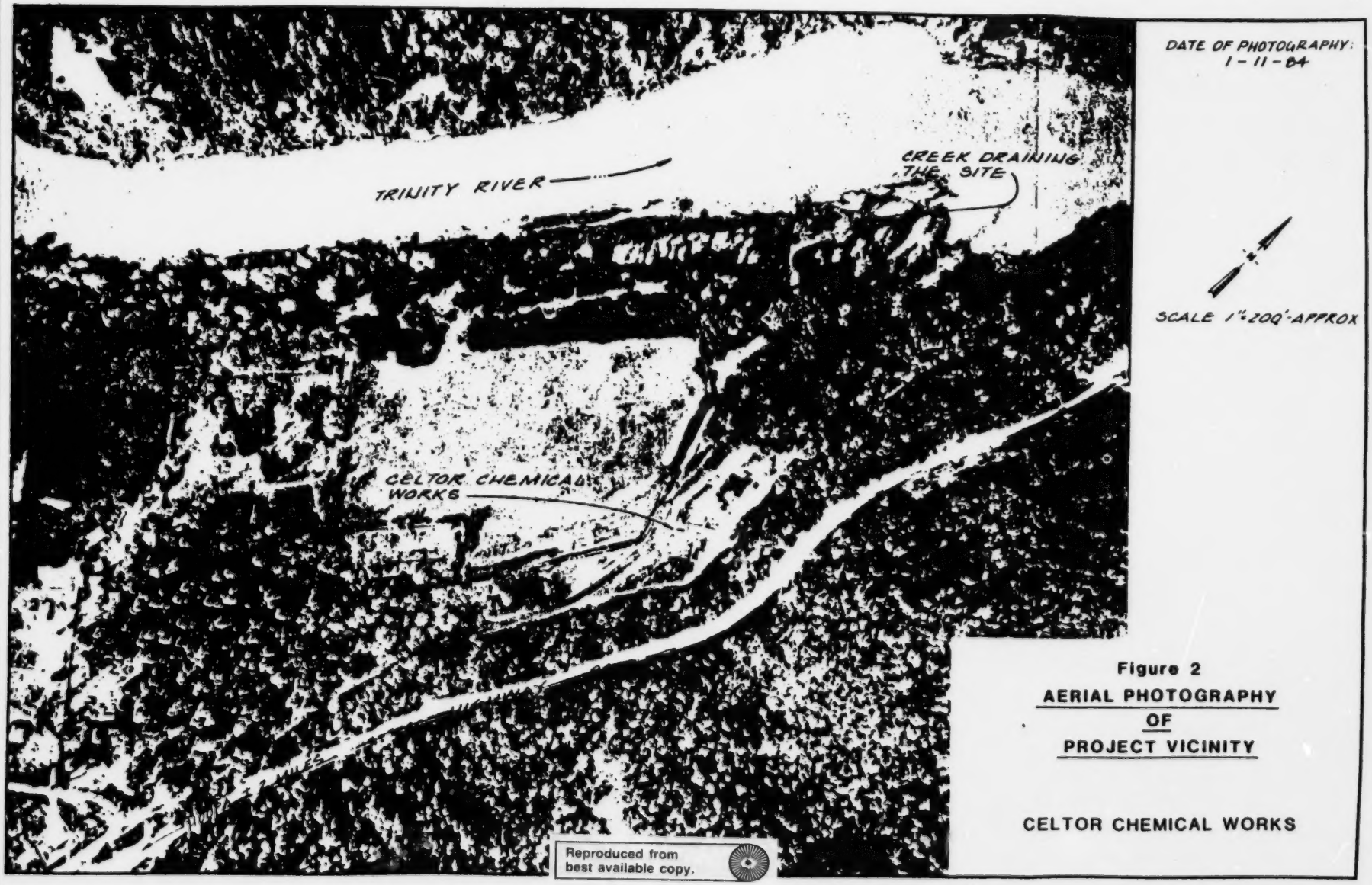

Figure 2
AERIAL PHOTOGRAPHY
OF
PROJECT VICINITY

CELTOR CHEMICAL WORKS

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best available copy.

The structure nearest to the site is a home situated approximately 500 feet to the south. One thousand two hundred twenty (1,220) feet south of the site are approximately one hundred homes which are part of the Norton Field Development. Altogether, approximately 900 residences are within three miles of the site. Until as recently as 1985, residents of the Norton Field Development, and other nearby homes, drank water from a community well which tapped into the same ground water which flows beneath the site. The well, which is located upgradient (south) of the site was sampled by the United States Indian Health Service (IHS), and was found to be free of inorganic contamination, except for iron, which is believed to be a local phenomenon. All residents in the vicinity of the site now drink water supplied from an upstream surface water source, except for a cluster of six to ten homes which draw from private wells located further upgradient of the site than the Norton Field community well.

II. SITE HISTORY

The Hoopa Valley Indian Tribe is the owner of the Celtor site. The Tribe's land is held in trust by the United States. The Tribe leased the land in 1958 to the Celtor Chemical Corporation which processed sulfide ore taken from the nearby Copper Bluff Mine. A responsible party search conducted for EPA in November, 1984 indicated that ore processing may have occurred at the site prior to 1958, but there is no reliable documentation to support this contention.

The plant, known as the Celtor Chemical Works Mill, is believed to have used dissolved air flotation to extract copper, zinc, and precious metals from the ore. The ore concentrates were then trucked off-site for further processing. Some mine tailings were stockpiled in the plantsite area. However, most were presumably sluiced down the gully to the Trinity River. The tailings may have been the cause of the numerous fish kills for which the California Department of Fish and Game cited the Celtor Chemical Corporation.

Beginning in 1960, the company became delinquent in its royalty payments to the Hoopa Valley Indian Tribe. By 1962, Celtor's indebtedness to the Tribe had increased to $23,592.87. According to records from the United States Bureau of Indian Affairs (BIA), mining and milling operations actually ceased on June 2, 1962 and June 5, 1962, respectively. Finally, in March of 1963, the BIA, as the trustee for the Hoopa Valley Indian Tribe, cancelled the leases of both the Copper Bluff Mine and the Celtor Chemical Works Mill.

After milling operations ceased, a very large pile of tailings was reported to have been left standing on a sand and gravel bar between the gully and the Trinity River, along with

the tailings that are known to have been left at the plantsite area. The aforementioned flood of 1964 removed all traces of any tailings that may have been on the sand and gravel bar.

The remaining tailings in the plant area, along with non-specific releases of ore or tailings throughout the plantsite area, are believed to be the cause of the acidic surface water runoff and very elevated metals concentrations in the soils throughout the plantsite area. These conditions were identified by sampling performed by the State of California Department of Health Services (DOHS) in July, 1981. The sampling occurred in the same month that DOHS first discovered the site through an ongoing California statewide abandoned industrial waste facility survey. In August of that same year, the IHS submitted to the United States Environmental Protection Agency (EPA) a Notification of Hazardous Waste Site under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). In February, 1982 the EPA Field Investigation Team performed additional sampling at the site.

In April, 1982 the site was placed on the California State Priority List, and on December 30, 1982, the site was proposed for inclusion on the National Priorities List (NPL).

On August 29, 1983, EPA wrote to the BIA, stating our intent to perform an Initial Remedial Measure (IRM) at the site and requesting BIA to either perform or sponsor the action. This letter explained that EPA considered BIA a potential responsible party at the site due to its role as trustee for the Hoopa Valley Indian Tribe. The mill lease stated that the site was to be left in a condition that would not be hazardous to public health or safety, a condition that Celtor had not complied with. The BIA response stated that the matter should be elevated to a higher level for resolution. Due to the impending winter rains, which would have caused continued acidic surface runoff and health threats, EPA performed the IRM action in December, 1983, prior to the resolution of the responsible party issue.

During the IRM, all visibly contaminated material was removed from the site. This material included all tailings, non-concrete structures, and a portion of the adjacent pasture (see Figure 3). In all, approximately 1,400 cubic yards of contaminated material were taken to the IT Corporation Class I hazardous landfill in Benicia, California. The total cost of this action was approximately $337,000. After the contaminated soil was removed, the fishing-access road was regraded and covered with fresh gravel. Finally, a drainage culvert was installed at the north end of the site, and the site was fenced. All IRM activities were completed on December 18, 1983. Plans were made to return to the site during the next rainy season to perform the sampling necessary to determine if run-off or soils from the site or adjacent areas still posed a health threat.

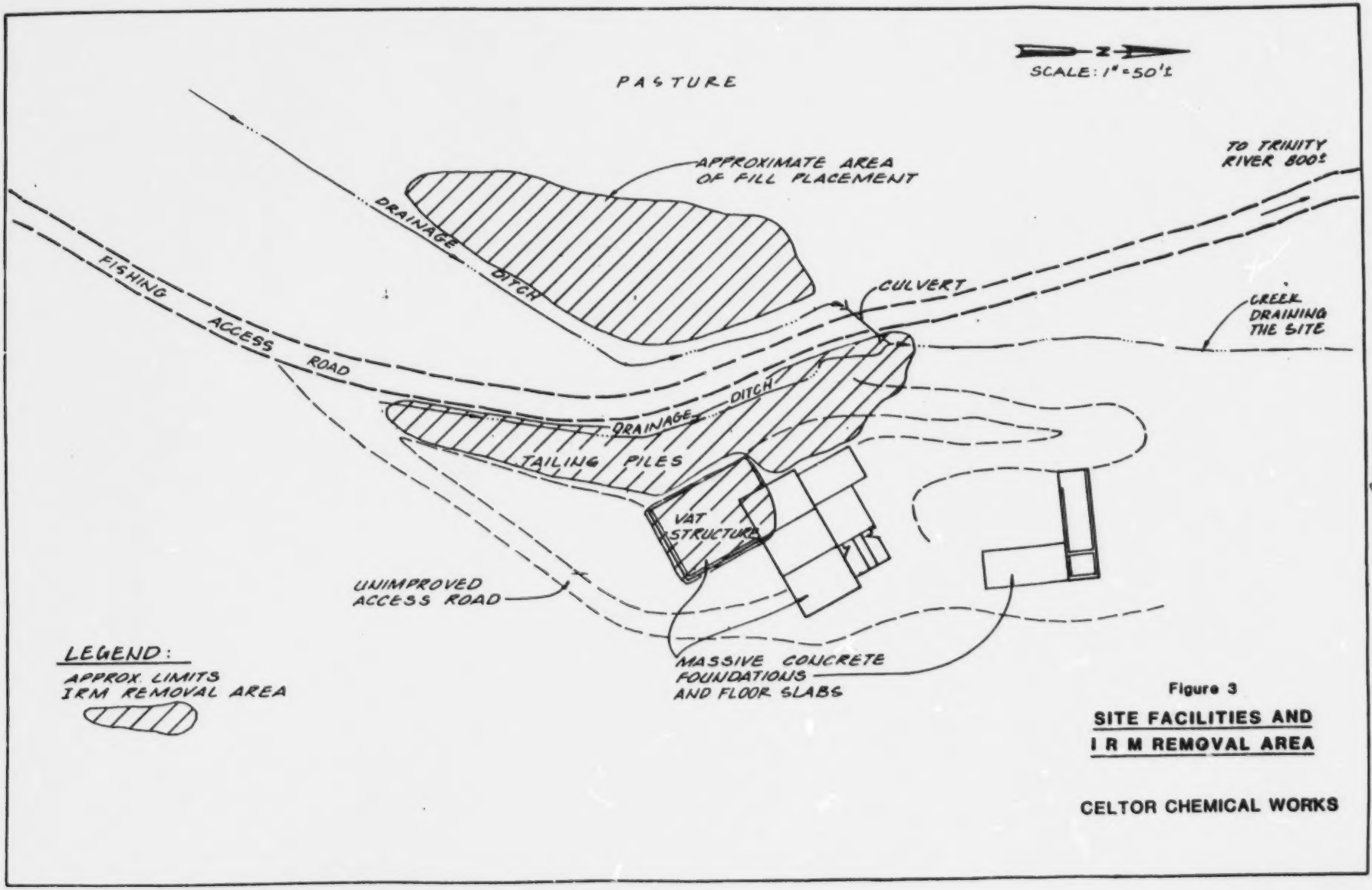

Figure 3

SITE FACILITIES AND I R M REMOVAL AREA

CELTOR CHEMICAL WORKS

III. CURRENT SITE STATUS

On October 10, 1984, the Final Remedial Investigation/ Feasibility Study Work Plan received EPA approval. Remedial investigation field work was completed on February 9, 1985, and the final Remedial Investigation Report was released on April 29, 1985. The results of the 177 surface and subsurface soil samples, 32 surface water and ground water samples, and 16 air samples are discussed below.

In order to have a basis on which to evaluate the results of the Remedial Investigation, criteria for evaluating the hazards at the site had to be determined. Because no Federal action levels exist for defining hazardous concentrations of metals in soil, the State of California, California Assessment Manual (CAM) Total Threshold Limit Concentrations (TTLC) criteria for defining hazardous materials were used. Water quality was evaluated on the basis of the EPA One Hour National Ambient Water Quality Criteria for Protection of Freshwater Aquatic Life, 45 Federal Register 79318 et seq., November 28, 1980 and 50 Federal Register 30784 et seq., July 29, 1985 (WQCAL), as promulgated under the Clean Water Act as amended in 1977 (CWA) and the EPA Maximum Contaminant Levels (MCLs) or Primary and Secondary Drinking Water Regulations, 40 C.F.R. Part 141 and 49 Federal Register 24330 et seq., June 12, 1984 (DWRs), as promulgated under the Safe Drinking Water Act as amended in 1977 (SDWA).

The soil samples taken from the main plantsite to a depth of 20 feet contained cadmium, copper, lead and zinc in concentrations greater than the CAM TTLC criteria to depths of 2.5 feet. Elevated concentrations of arsenic, copper, and zinc were also found to depths of 11.5 feet. These deeper concentrations were above background levels, but were not necessarily greater than the CAM TTLC criteria. The most significant elevated metals concentrations in the plantsite were 124,000 milligrams per kilogram (mg/kg), or parts per million (ppm), copper at the surface, 23,330 mg/kg zinc on the fishing access road surface, and 1,040 mg/kg lead, also on the surface.

The gully was also found to be contaminated. The remedial investigation field personnel observed a vein of tailings which was approximately four feet wide and five feet deep. Again, arsenic, cadmium, copper, lead, and zinc were found at concentrations exceeding the CAM TTLC criteria. Although concentrations above background were found at depths up to 4.5 feet, maximum concentrations were only found between the surface and 2.5 feet. These maximum concentrations were 600 mg/kg for arsenic, 310 mg/kg for cadmium, 25,500 mg/kg for copper, 1,680 mg/kg for lead, and 62,100 mg/kg for zinc.

A thin lens of contaminated material was found beneath the clean fill that had been placed in the adjacent pasture after the IRM. In this lens, 1.25 feet below the surface, arsenic, cadmium,

copper, lead, and zinc were found in elevated concentrations, however, only lead, at 2,650 mg/kg, and zinc, at 11,200 mg/kg, were above the CAM TTLC criteria.

During the winter months, water from many springs and seeps travel through or beneath the plantsite. These springs either emerge somewhere in the plantsite area and eventually collect in the gully, or continue to travel beneath the plantsite for eventual discharge into the Trinity River.

Sampling showed that these waters become contaminated as they pass through or on top of the site. Water leaving the site and in the gully was contaminated with cadmium, copper, lead, iron, and zinc above the MCLs, as well as, in some cases, the more stringent WQCAL. No WQCAL for lead has been established. Maximum concentrations found on the plantsite or in the gully were 241 micrograms per liter (ug/L), or parts per billion (ppb), of cadmium, 9,920 ug/L of copper, 16,600 ug/L of iron, 7 ug/L of lead, and 48,300 ug/L of zinc. The pH of the water was as low as 3.6. That value, however, is not lower than the CAM TTLC and the Resource Conservation and Recovery Act as amended in 1984 (RCRA) criteria for definition of a hazardous material, which is pH equal to or less than 2.

Sampling upstream and downstream of the gully's discharge point into the Trinity River showed that the river was not detectably impacted by water discharges from the gully. A worst case analysis of the potential impact was conducted in the Remedial Investigation Report. Assuming a first flush of contaminants from the site entered the river during low flow, this analysis showed that river impact would be unlikely because the projected dilution of 1:500 (normal dilution is between 1:1000 and 1:5000) would prevent the water quality in the Trinity River from rising above the WQCAL for more than a few hours.

Sampling during the remedial investigation showed that ground water beneath, and in the vicinity of the site was not contaminated. There were, however, elevated levels of iron in some of the samples, but discussions with the Environmental Director of the Hoopa Valley Business Council (HVBC), the representatives of the Hoopa Valley Indian Tribe, and the IHS, indicated that this is due to naturally elevated levels of iron in the local soils. In summation, there does not appear to be a ground water contamination problem associated with the site.

On June 18 and 19, 1985, in response to community concerns about noxious odors in the vicinty of the site, the EPA Technical Assistance Team performed air sampling at the site. No detectable concentrations of air pollutants relating to the reported sulfur odor could be found. However, there is a noticeable sulfur odor in the area at times. If the odors are caused by the contaminants at the site, implementation of the recommended alternative should eliminate this odor nuisance.

In summation, the Remedial Investigation found that the site poses a threat to human health and the environment from high levels of arsenic, cadmium, copper, lead, and zinc in the soil. Direct contact, especially ingestion of greater than 2 liters per day, with contaminated water in the plantsite, roadway, or gully areas also poses a human health and environmental threat.

IV. ENFORCEMENT ANALYSIS

A potential responsible party search completed for the EPA in November, 1984 concluded that the Celtor Chemical Corporation was a defunct company with no remaining assets or interests that could be pursued for cost recovery. The BIA, as trustee for the Hoopa Valley Indian Tribe and the United States Department of the Interior (DOI), the parent agency of the BIA, are the only other potential responsible parties.

On August 29, 1983, prior to the IRM, EPA sent to BIA a 3007/104 Notice Letter which identified the BIA as a potential responsible party and requested BIA to fund or perform the IRM. On October 24, 1983, BIA responded and suggested that the matter be elevated to BIA Headquarters. After EPA conducted the IRM, a second Notice Letter was sent to the DOI in August, 1985 specifying our intent to take remedial action and requesting DOI to fund or perform the remedial action. A meeting was held in Washington, D.C. on September 19, 1985 to disucss the DOI's status as a potential responsible party. At the meeting, the DOI refused to contribute to or conduct the remedial action. However, DOI agreed to discuss the matter further with EPA after the cleanup was completed during cost recovery negotiations. Results of ongoing discussions at the Headquarters level regarding DOI's liability for sites on Indian lands that are held in trust by DOI will be a key element in the resolution of DOI's status at this site.

V. ALTERNATIVES EVALUATION

The following section summarizes the alternatives evaluation and recommended alternative selection process as documented in the Feasibility Study. All procedures are consistent with the National Oil and Hazardous Substances Contingency Plan, 47 Federal Register 31180 et seq., July 16, 1982 (NCP) and the Guidance on Feasibility Studies Conducted Under CERCLA, EPA, June, 1985. This section begins with the definitions of the remedial actions that were evaluated then describes the site-specific action levels that were selected for the site. An alternative, consistent with all relevant guidance, is then chosen. The steps in this evaluation are technology development, initial alternative screening, and detailed analysis of alternatives. Finally, the results of alternatives evaluation is documented.

V.A. Remedial Action Definition

The NCP, Section 300.68(e)(2) states that source control remedial actions are appropriate when a substantial concentration of hazardous substances remain at or near the areas where they were originally located. Because all of the contamination in the plantsite and gully are presumed to be left from operations of the Celtor Chemical Works, and not from off-site migration, the measures under consideration for the plantsite and gully are considered source control. Because contaminants in the field are presumed to have migrated from the plantsite, the remedial action in the pasture area, according to the NCP Section 300.68(e)(3), is considered an off-site, or management of migration, remedial action.

V.B. Site-Specific Action Level Development

In the June 28, 1985 public comment draft Feasibility Study Report, site-specific objectives for remedial action were developed. According to the Public Health Assessment prepared for the report, under the worst case scenario of no response action and unrestricted residential site use, the primary health threats are:

- Direct contact with soils contaminated with arsenic, cadmium, copper and lead.
- Consumption of surface water running off the site or in the gully. This water sometimes exceeds the MCLs for copper, iron, lead, and zinc. The elevated concentrations of iron are believed to be a natural condition.

As described in the NCP, Section 300.68(j), the objective of every remedial action is to "...mitigate(s) and minimize damage to and provide(s) adequate protection of public health, welfare, or the environment...." For the Celtor site, the general remedial goals are to prevent human exposure to soil and water that is contaminated at concentrations that may pose a public health or environmental threat. To implement these goals, site-specific action levels were developed as shown in Table 1.

The action levels for water were established as discussed below. Water flows in the gully are intermittent and are insufficient to support most aquatic life. Accordingly, water quality criteria for the gully, for surface water running into the gully, and for ground water, which is a known drinking water resource, are based on action levels necessary to protect human health. Therefore, the surface water and ground water site-specific action levels selected for the site are the MCLs, or DWRs. These actions levels fully protect public health in all scenarios.

TABLE 1

SITE-SPECIFIC ACTION LEVELS FOR THE CELTOR CHEMICAL WORKS SITE

METAL	SOILS	SURFACE & GROUND WATER[1]	Trinity RIVER[2]
ARSENIC	100 mg/kg	50 ug/L	50 ug/L
CADMIUM	25	10	2.8
COPPER	2,500	1,000	2.6
LEAD	500	50	50
ZINC	5,000	5,000	47

1. Site-specific action levels for on-site surface water and local ground water are MCLs or DWRs, as promulgated under the SDWA.

2. Site-specific action levels for the Trinity River at the gully discharge point are the WQCAL, as promulgated under the CWA and as based on a hardness of 75 mg/L as $CaCo_3$, except for arsencic and lead, where the more stringent MCL was used.

Action levels for the Trinity River were based on the most stringent Federal standards for protection of aquatic life. These are the WQCAL, as based on a hardness of 75 mg/L as $CaCo_3$. For arsenic and lead, however, the more stringent MCL of 50 ug/L was used instead of the WQCAL of 440 ug/L and 57.4 ug/L, respectively. These action levels for the Trinity River fully protect human health and most aquatic organisms.

In addition to the concerns regarding metals contamination, low pH surface water may also pose a health hazard. Therefore, an additional action level for surface water or soil of pH = 2 or lower was developed. This is based on the RCRA corrosivity requirements found in 40 C.F.R. 261.22, which is the definition for a hazardous waste under RCRA.

Action levels for contaminants in soil were based primarily on the acceptable range of contaminant levels in soil as derived from the EPA National Ambient Water Quality Criteria for Protection of Human Health, 45 Federal Register 79318 et seq., November 28, 1980 (WQCHH), as promulgated under the CWA, and the MCLs, or DWRs, as promulgated under the SDWA. First, an acceptable daily dose was computed by multiplying the WQCHH or MCL for a given contaminant by two liters, which is the maximum daily ingestion rate for the WQCHH or MCL to protect human health. This computed daily dose is then divided by 10 grams or 0.1 grams, which is the United States Centers for Disease Control (CDC) maximum estimated ingestion rate of soil for a child or an adult, respectively. The result is a range of contaminant concentrations in soil which will fully protect human health. These acceptable contaminant concentrations are: arsenic 10-1,000 mg/kg, cadmium 2-200 mg/kg; copper 200-20,000 mg/kg; lead 10-1,000 mg/kg; and zinc 1,000-100,000 mg/kg.

Other considerations were also evaluated in setting the action levels. The action level for arsenic of 100 mg/kg is based on an advisory from the CDC for another CERCLA site. This level is much stricter than the CAM TTLC of 500 mg/kg. The action level for cadmium of 25 mg/kg is consistent with the action level set for the Capri Pumping Service site (a State of California Superfund site), and is based on cleanup for unrestricted residential use. It is one-quarter of the CAM TTLC of 100 mg/kg. The action level for lead of 500 mg/kg is also consistent with the Capri site, is one-half the CAM TTLC of 1,000 mg/kg, and is also consistent with other CERCLA sites. Action levels at these other Superfund sites ranged from 300 mg/kg to 1,000 mg/kg. The action levels for copper and zinc were established at the CAM TTLC levels of 2,500 mg/kg and 5,000 mg/kg, respectively, because these levels are sufficient to protect human health. Toxic effects from these metals are not found except for materials with very high concentrations (20,000 to 100,000 mg/kg range) as these metals are primarily regulated for taste and odor considerations. The copper and zinc action levels are also consistent with the levels set for the Capri site, and provide a wide margin of safety even in worst case scenarios.

V.C. Technology Development

In order to meet these action levels, several general response actions were developed. The general response actions, and some of the associated technologies that were considered in the Feasibility Study were:

- Containment: Capping, ground water containment barrier walls, bulkheads, and gas barriers.
- On-Site Disposal: Encapsulation and land application.
- Off-Site Disposal: Excavation and off-site disposal.
- On-Site Treatment: Incineration, solidification, biological treatment, chemical treatment, in-situ soil flushing and soil flushing.
- Off-Site Treatment: Same as on-site treatment, except for in-situ soil flushing.
- No Action: No remedial action.

According to the Guidance on Feasibility Studies Under CERCLA, the second step in the development of remedial alternatives is to define and screen technologies that are applicable to the general response actions listed above. Inapplicable, infeasible, or unreliable technologies are assembled and screened primarily through the use of engineering judgement and qualitative comparisons.

After developing an extensive list of technologies, based on the general response actions listed above, and screening, based on such factors as site conditions, waste characteristics, and technology effectiveness, the technologies presented in Table 2 remained.

V.D. Initial Alternative Screening

Once the technologies identified above have been screened, more definite alternatives can be developed. At least one alternative for each of the five following catagories must be evaluated per the feasibility study guidance. These five catagories, and the corresponding alternatives, are presented below:

1. Alternatives specifying off-site storage, destruction, treatment, or secure disposal of hazardous substances at a facility approved under RCRA. Such a facility must also

Table 2
TECHNOLOGIES REMAINING AFTER SCREENING

Response Action	Technologies
Containment	Capping of Hazardous Soils and Nonhazardous Concrete Structures
	Native Soil (Silt)
	Imported Clay
	Multilayer Systems
	Synthetic Cover and Soil
	Loam over Synthetic Cover over Clay
	Native Soil over Imported Clay
	Drainage Systems (these technologies apply to all response actions except no-action)
	Interceptor Trenches
	Permeable Geotextile Fabric
	Drainage Pipes
	Gravel Layers
Onsite Disposal	Soil Excavation
	Onsite Encapsulation of Hazardous Soil
	Clay, Native Soil, and Synthetic Liner Combination
	Drainage Systems (see above list)
	Onsite Burial of Nonhazardous Materials (e.g., concrete)
	Structure Demolition
	Burial with Native Soil
Offsite Disposal	Removal of Hazardous Soil
	Soil Excavation
	Trucking to Class 1 RCRA-approved Landfill
	Disposal at Class 1 RCRA-approved Landfill
	Removal of Nonhazardous Soil and Concrete
	Soil Excavation
	Structure Demolition
	Trucking to Class II or Class III Landfill
Treatment	Onsite Treatment
	Chemical

be in compliance with all other applicable EPA standards (e.g., Clean Water Act, Clean Air Act, Toxic Substances Control Act). Removal and treatment are in this category.

2. Alternatives that attain all applicable or relevant Federal public health or environmental standards, guidance, or advisories. Removal, encapsulation, and treatment all fall into this category.

3. Alternatives that exceed all applicable or relevant Federal public health and environmental standards, guidance, and advisories. No alternatives are in compliance with this category because it was not feasible to develop an alternative that would exceed all applicable environmental standards.

4. Alternatives that meet the CERCLA goals of preventing or minimizing present or future migration of hazardous substances and protect human health and the environment, but do not attain the applicable or relevant standards. This category may include an alternative that closely approaches the level of protection provided by the applicable or relevant standards. Capping falls into this category.

5. A no-action alternative must be included.

A more detailed description of the alternatives mentioned above is provided below:

1. No-Action

2. Capping -
   - Partially demolish concrete structures (to facilitate capping).
   - Excavate soils contaminated above action levels from the pasture and gully, deposit in plantsite area, and backfill pasture and gully with clean soil.
   - Regrade all areas.
   - Install surface and subsurface drainage systems.
   - Install multilayer system of clay, synthetic cover, and native soil over contaminated material in plant area.
   - Vegetate site.
   - Install security fencing to protect cap and new vegetation.

3. Removal -
   - Demolish and remove structures.
   - Excavate soils contaminated above action levels from all site areas.
   - Remove all soils to a RCRA-approved Class I landfill.
   - Import clean fill as necessary.
   - Regrade and vegetate site.
   - Install security fencing to protect new vegetation.

4. Encapsulation
   - Demolish concrete structures and bury on-site.
   - Excavate soils contaminated above action levels from all site areas.
   - Backfill pasture and gully with clean soil.
   - Encapsulate contaminated soils on-site.
   - Install surface and subsurface drainage systems.
   - Import clean fill as necessary.
   - Regrade and vegetate site.
   - Install security fence to protect new vegetation.

5. Treatment
   - Demolish and bury structures on-site.
   - Prepare the site for a treatment facility.
   - Excavate soils contaminated above action levels.
   - Process soils contaminated above action levels through the EPA Mobile Soils Flushing Unit.
   - Return clean material to excavated areas.
   - Add clean fill as necessary.
   - Remove contaminated sludges/waste to a RCRA-approved Class I landfill.

- Remove treatment facility.
- Regrade and vegetate site.
- Install security fence to protect new vegetation.

An initial screening of alternatives is performed according to the NCP, Section 300.68. Public health, environmental, and cost factors, including potential adverse environmental impacts and engineering feasibility are figured into the screening process.

No-Action was eliminated at this time because it would not protect human health or the environment. However, No-Action was carried through the detailed analysis for the purpose of comparison with other alternatives. The results of a bench scale soils flushing treatability study, Metals Extraction Study for the Celtor Chemical Works, EPA, October, 1985, indicated that treatment would not be effective. None of the flushing solutions tested was able to extract sufficient contaminants to attain the action levels. While treatment was carried through the detailed alternatives analysis in the draft Feasibility Study Report, it is now being dropped from further consideration on the basis of the test data.

V.E. Detailed Analysis of Alternatives

A detailed analysis of the remaining alternatives was performed according to the NCP, Section 300.68. Five factors are evaluated in this analysis: technical, institutional, public health, environmental, and cost. Chapters 3, 4, 5, 6, and 7 of the Guidance on Feasibility Studies Conducted Under CERCLA provide an in-depth discussion of the components of each factor requiring further evaluation.

V.E.1. Technical Evaluation

There are four primary factors in the technical evaluation: performance (including effectiveness and useful life), reliability (including operations and maintenance (O&M) requirements and demonstrated performance), implementability (including on- and off-site conditions, time to implement, and time to achieve beneficial results), and safety.

V.E.1.a. Performance: Effectiveness: The Removal Alternative would provide the highest level of protection to human health and the environment because it would permanently remove all contaminants from the site. Encapsulation and Capping may provide an acceptable level of protection, if all of their components (the liners, cap, and drainage facilities) were properly maintained. However, the effectiveness of the encapsulation cell, and especially the cap, may be seriously compromised by the natural springs in the area. There is no assurance that the interceptor trenches

and subsurface drains could effectively prevent ground water (especially the springs) from coming into contact with the contaminated soil. The certainty with which this objective could be achieved is greater for encapsulation than for capping. No-Action is completely ineffective in preventing direct contact with contaminated soils or the formation of contaminated runoff.

Useful Life: Removal would have an infinite useful life. The useful life of Encapsulation and Capping is estimated to be thirty years, based on the life of the materials. At that time, the entire encapsulation cell or cap might have to be replaced. The concept of useful life does not apply to the No-Action Alternative.

V.E.1.b. Reliability: Operation and Maintenance: Except for No-Action, each of the alternatives will require grounds maintenance for an initial period of one year. This would include caring for surface vegetation, doing preventative work on any surface water drainage systems, and taking care of erosion problems in order to assure that revegetated areas become properly established. After the first year, vegetation or surface drainage maintenance would not be required for the Removal Alternative. Capping and Encapsulation both require long term (thirty years and greater) maintenance of vegetation and surface drainage features to ensure the effectiveness of the technology.

A fence will be required the first year for all alternatives. Thereafter, Capping, Encapsulation, and No-Action will all require a fence. This is not a legal requirement. However, good engineering judgement indicates that maintaining a fence around the site for those alternatives which leave hazardous materials at the site is a sound method to ensure that the vegetation, the remedial technology, and the contaminants are not disturbed.

Demonstrated Performance: All of the component technologies utilized in the Removal, Capping, and Encapsulation Alternatives have been widely used and proven in similar applications. Because all contaminants will be removed from the site with the Removal Alternative, there is no chance of failure of this technology. At this site, Encapsulation is less likely to be effective than Removal because there are many springs and seeps in the area. Furthermore, it is impossible to predict the location of all surface water in the area. It is unlikely, therefore, that interceptor trenches and subsurface drains could prevent all the subsurface water from coming into contact with the encapsulation cell. In time, this water could damage the encapsulation cell and compromise the effectiveness of this alternative. The Capping Alternative, which has no bottom or side liner, has a greater probability of failure than the Encapsulation Alternative also because the interceptor trenches and subsurface drains may not divert all water which may contact the contaminated material beneath the cap.

The Encapsulation and Capping Alternatives may also fail because of degradation of their surface features. If vegetation is not properly maintained, if erosion is not prevented, or if any heavy objects fall or are placed on the surface, the integrity of the top cap will be compromised. Careful maintenance can help prevent such a failure.

V.E.1.c. Implementability: Constructability: None of the alternatives present exceptional problems for construction, given a reasonable schedule, favorable weather, and good ground conditions. Because several springs are present on the site, construction of any of the alternatives would be unadvisable during the wet winter months. For the Encapsulation and Capping Alternatives, there must be controlled moisture conditions for the placement of the clay layers. No other on-site conditions should be significant to the construction of any alternative.

There are many qualified contractors with extensive experience in performing removal work. Currently no restrictions exist on the off-site transportation or disposal of hazardous wastes that would prevent the implementation of the Removal Alternative (see the CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS section).

There are fewer qualified contractors who could perform the encapsulation or capping work. Of the two alternatives, capping is much simpler to perform and has had wider field use. Encapsulation is a complex technology with many components which would require careful construction. Sealing the seams between the sections of fabric is the most critical aspect of the construction, but there are many portions of construction which must be properly performed in order for this alternative to perform adequately.

Time to Implement and Time to Achieve Beneficial Results: All of the alternatives have relatively short construction schedules and could be implemented over one dry season, for example, from April through October. The following construction times do not include the design or bid and award period.

- Removal and Disposal.....3 Months
- Capping.....2 Months
- Encapsulation.....4 Months
- Treatment.....6 Months
- No-Action.....0 Months

The differences between construction times for the alternatives (except for No-Action) are minor. Once constructed, each alternative would immediately begin providing the benefits associated with the component technologies.

V.E.1.d. Safety: Exposure to hazardous materials during construction would be most likely to occur through inhalation of airborne dust since all alternatives (except No-Action) involve earthwork operations. Without strict dust control measures,

this exposure could affect the public as well as construction workers. Direct contact and ingestion by workers is also a possibility.

The Removal Alternative presents the additional possibility of exposure during off-site transportation. Depending on the truck capacity and the total volume of contaminated soil hauled, this may involve up to 600 truckloads, possibly including up to 20 trips per day. Health and safety considerations during construction are not applicable to the No-Action Alternative.

The Capping Alternative requires the least amount of earthwork, has the shortest construction period, and does not involve any off-site transport of contaminated materials. Therefore, it is the most favorable in terms of potential exposure during construction. The Encapsulation, Removal, and Treatment Alternatives all require about the same amount of excavation of contaminated material, although Encapsulation may invlove more handling because of the stockpiling of contaminated soils required during the construction of the cell liner. The Removal Alternative involves off-site transportation of hazardous materials, while Encapsulation does not. Therefore, the overall potential for exposure to contaminated material is approximately equal for the alternatives, although somewhat different in types.

To help prevent potential health risks, stringent health and safety requirements will be implemented during on-site work and when contaminants are being hauled off-site.

V.E.2. Institutional Evaluation

There are three primary factors in the institutional evaluation: compliance with applicable or relevant Federal environmental and public health standards, agency coordination, and community relations. The first factor is discussed in detail in the CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS section, community relations is dissussed in the accompanying Community Relations Responsiveness Summary, and agency coordination is summarized below.

V.E.2.a. Agency Coordination: The following agencies have been kept informed or have been coordinated with in the past, and we will continue to so for all furture site activities:

- Hoopa Valley Indian Tribe
- BIA
- DOI
- DOHS
- RWQCB
- U.S. Army Corps of Engineers
- California Department of Fish and Game
- U.S. Fish and Wildlife Service

The Hoopa Valley Indian Tribe, the BIA, the DOI, and the DOHS have all expressed a strong preference for the removal alternative.

V.E.3. Public Health Evaluation

An extensive Public Health Assessment was conducted for the Feasibility Study. The CURRENT SITE STATUS section of this document describes the results of the assessment while the evaluation and selection of site-specific action levels necessary to protect human health and the environment are described previously in this section.

V.E.4. Environmental Evaluation

A detailed evaluation of the short and long-term adverse and beneficial effects of the response on the resources people use (air, water, land, etc.) and on the biological environment were conducted in the Feasibility Study. It was determined that all of the alternatives, except No-Action, would have similar short-term impacts related to construction activities. These impacts would be limited to the construction time and would include elimination of wildlife habitats or passage ways, and extremely limited use of the fishing-access road.

Surface water leaving the site is not currently used by people or aquatic life and is likely to remain unused due to low and intermittent flow. Removal will improve surface water quality the greatest, since no contaminants will remain at the site. The improvement in surface water quality will be permanent and without regard to site or maintenance conditions. Encapsulation, given proper construction and maintenance, should provide for the next greatest improvement in surface water quality, since contaminants should remain completely isolated from subsurface water which could carry contaminants up to the surface. Capping may improve surface water quality to the same degree as Encapsulation, but it is unlikely, due to the increased possiblility of subsurface water mixing with the contaminants. No-Action will not improve surface water quality and, unlike the other alternatives, will continue to allow off-site migration of water containing concentrations of contaminants which are hazardous to public health.

Removal provides for the most beneficial long-term use of the land, as there would be no deed restrictions and the land could be used for any future uses. Encapsulation and Capping would both require permanent deed restrictions on the site, but would allow for such limited uses as a park or wildlife area. No-Action would require a permanent deed restriction, preventing almost all future activities.

If the noxious odor described in CURRENT SITE STATUS is coming from the site, Removal would be the most effective in eliminating the problem. Encapsulation and Capping might be effective in reducing the odor, and No-Action would have no effect on the odor.

Ground water and the Trinity River currently do not appear to be impacted by the site, and none of the alternatives are likely to have any long-term effects on either resource.

V.E.5. Cost Evaluation

The costs developed for this evaluation are order-of-magnitude estimates with an accuracy of +50 and -30 percent. These estimates reflect January 1985 price levels and include thirty years of operation and maintenance. The costs are shown in present worth utilizing a 10 percent discount rate as outlined in the Office of Management and Budget Circular No. A-94.

Alternative	Total Cost	Capital	O & M
No-Action	$ 0	$ 0	$ 0
Capping	$ 921,705	$ 889,702	$ 32,000
Removal	$ 3,072,338	$ 3,065,338	$ 7,000
Encapsulation	$ 1,201,837	$ 1,169,837	$ 32,000

VI. COMMUNITY RELATIONS

The primary interested parties in this site are the Hoopa Valley Indian Tribe, the BIA, and the DOI. Both the HVBC and the BIA submitted written comments on the draft Feasibility Study during the official comment period which ran from June 28, 1985 to July 19, 1985. Both commentors stated a strong preference for removal, which is consistent with what both agencies have been requesting since EPA first became involved in the site in 1981. During the public meeting to discuss the Feasibility Study, which was held on July 11, 1985, at the Hoopa Valley Business Council chambers, some of the commentors expressed objections with the Treatment Alternative and some expressed a preference for the Removal Alternative. All of the comments and concerns are discussed in the attached Community Relations Responsiveness Summary.

The public comment period was extended until August 16, 1985, for the DOI. They received the extension because of their status as a potential responsible party and because they did not receive a copy of the draft Feasibility Study until July 23, 1985. DOI has not submitted written comments as of the date of this document, but when solicited over the phone, DOI also preferred the Removal Alternative.

The only other comment received on the remedial action alternatives was on a proposed alternative that was not developed. The HVBC suggested that EPA consider partial treatment combined with removal. Because treatment was shown to be ineffective during bench scale studies, the HVBC's proposed alternative would be a more expensive variation of the removal alternative with no additional benefits, such as reduced amounts of hazardous material requiring off-site disposal.

A full discussion of all community relations activities, community concerns, comments, and the EPA response to the comments is included in the attached Community Relations Responsiveness Summary.

VII. CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS

It is EPA policy to give primary consideration to remedial actions that attain or exceed applicable or relevant federal environmental or public health standards. State and local standards should also be considered; however, State standards that are more stringent than Federal standards may form the basis for the remedy only if the result is consistent with the cost-effective remedy based on federal standards. The State may also pay the additional cost necessary to attain the State standard(s). The environmental or public health laws which are relevant or applicable to the Celtor site are:

- Resource Conservation and Recovery Act (RCRA)
- Floodplain Management Executive Order 11988 (E.O.11988)
- Clean Water Act (CWA)
- Occupational Safety and Health Administration (OSHA) Requirements
- Department of Transportation (DOT) Hazardous Materials Transport Rules
- Ground Water Protection Strategy (GWPS)

VII.A. RCRA

RCRA Subtitle C, 40 C.F.R. Parts 264 and 265 contain closure requirements for landfills and surface impoundments that are relevant to this site. This law requires that all contaminants be prevented from migrating off-site, and if off-site migration has occurred, it must be cleaned up. Consolidation of all wastes into the plantsite area and subsequent capping or encapsulation of the wastes with long term surface and groundwater monitoring may meet these requirements. However, significant uncertainty exists regarding the ability of the interceptor trenches and subsurface drains to divert all subsurface water from entering the waste management area. Also, a high likelihood exists for off-site migration of contaminants in the Capping scenario if subsurface water enters the waste management area. Given the significant, yet unpredictable amount of subsurface water flows in the area, the integrity of the encapsulation cell may, over time, be compromised. Off-site migration of wastes would then be just as probable as with the Capping Alternative. Therefore, while Capping and Encapsulation may, at the time of construction, meet the requirements of RCRA, they are unlikely to remain in compliance.

Removal ensures that all RCRA requirements will be met. On June 19, 1985 the Acting Assistant Administrator, the Office of Solid Waste and Emergency Response and the Office of General

Counsel agreed to a new interpretation of the Landfill and Surface Impoundment Closure Requirements described in 40 C.F.R. Part 264.111. "Clean closure" (i.e. no need for long-term monitoring) no longer requires removal of all contaminants to background levels. Clean closure may now be achieved by removing all contaminants which may pose a threat to human health or the environment or which may migrate off-site. The site-specific action levels for this site will protect human health and the environment and assure that Removal will be in full compliance with this requirement, hence, full compliance with RCRA.

Since the No-Action Alternative would allow contaminants to continue to migrate off-site in concentrations that pose a hazard to human health and the environment, No-Action is not RCRA compliant.

VII.B. E.O. 11988

Because portions of the site, the pasture and the gully are presumed to lie within the 100-year floodplain, E.O. 11988 requires that a floodplain assessment be conducted. The assessment requires consideration of all environmental effects, community welfare, costs, and all possible alternatives. The assessment concluded that the best course of action to ensure protection of the environment, the prevention of off-site contaminant migration, and stabilization and preservation of the floodplain, would be to remove all contaminants from the floodplain then regrade and revegetate the affected areas to natural conditions. This will ensure that areas in the floodplain (the gully) will be as resistant to the damaging effects of floods, without the added possibility of contaminants migrating off-site, as if no construction in the floodplain had ever occurred. Therefore, Capping, Encapsulation, and Removal all meet the substantive requirements of E.O. 11988. Since No-Action does not protect against the release of contaminants into the environment during a 100-year flood it does not meet the substantive requirements of E.O. 11988.

VII.C. CWA

Under the CWA, discharges from a facility which enter into a water body of the United States must meet California Water Quality Standards, based on the designated uses of the receiving water. However, because this site is on Indian reservation land, State environmental laws or regulations apply as State law. They are, however, incorporated into the Federal law, the CWA, and thus apply.

Disharges from the gully enter the south fork of the Trinity River within the Klamath River Basin 1-A. The State of California has not designated any specific discharge limits for inorganic contaminants for this river basin. However, there does exist, under California Water Quality Standards, a non-degradation policy for all high quality waters in the State. While in theory this means that the RWQCB requires zero discharge of contaminants

from any site or facility, in practice the RWQCB recognizes that zero discharge may be inpractical or unfeasible. Discussions with the RWQCB have confirmed that should up and downstream sampling confirm that discharges from the gully do not impact the Trinity, an action level meeting the DWRs for water quality in the gully would be acceptable.

Capping, Encapsulation, and Removal, would all ensure that water quality in the gully is at least equal to DWRs and would all comply with the CWA and California Water Quality Standards. Because discharges from the site are not currently impacting the Trinity, No-Action may also comply with these requirements.

VII.D. OSHA

Any applicable OSHA requirements will be addressed during the detailed design phase of the selected alternative. OSHA requirements address such concerns as on-site worker safety and health. All alternatives can be designed to be in full compliance with all OSHA requirements.

VII.E. DOT

DOT Hazardous Material Transport Rules apply only to the off-site transportation of hazardous materials. The Removal Alternative can be designed to be fully compliant with all DOT rules and regulations.

VII.F. GWPS

The GWPS is not a relevant or applicable standard at this time, but is to be considered during remedial alternative selection. The ground water beneath the site is designated as a Class II ground water under the GWPS since it has been used in the past and could be used in the future as a drinking water source. For these waters, the GWPS states that the goal of CERCLA cleanups will be drinking water quality or RCRA approved Alternative Concentration Limits. Currently, the site is not impacting ground water, and implementation of any alternative is not expected to cause an impact on ground water. All alternatives would be in full compliance with the GWPS.

VII.G Other

As mentioned above, State laws and regulations do not apply to this site as it is located entirely on Indian reservation land. There are no other known applicable or relevant Federal laws or regulations which apply to this site.

VIII. RECOMMENDED ALTERNATIVE

Section 300.68(j) of the NCP states that "The appropriate extent of remedy shall be determined by the lead agency's selection of the remedial alternative which the agency determines is cost-effective (i.e. the lowest cost alternative that is technologically feasible and reliable and which effectively mitigates and minimizes damage to and provides adequate protection of public health, welfare, or the environment)". Based upon the Remedial Investigation and Feasibility Study, EPA Region 9, the State of California, the Hoopa Valley Indian Tribe, the Bureau of Indian Affairs, and the Department of the Interior agree that excavation and off-site removal of all soil contaminated above site-specific action levels is the most cost-effective long-term remedial action necessary to protect human health and the environment. This alternative fully complies with all relevant or applicable laws and regulations.

No-Action was eliminated as a potential alternative because it would not protect human health and the environment, based on the Public Health Assessment conducted for the Feasibility Study. Capping was eliminated beause of the high probability of subsurface water migration through the contaminated soil and off-site migration of contaminants. These contaminants could be carried to the surface via the many springs in the area where they would pose a human health threat. Encapsulation was also eliminated because of probability that, over time, the many springs in the area could damage the integrity of the encapsulation cell, thereby permitting contaminants to migrate to the surface and off-site.

Capping and Encapsulation have the added disadvantage of requiring a permanent deed restriction on the property, since the inorganic contaminants present at the site do not degrade with time. In addition, the entire cap or encapsulation cell may require complete replacement every 30 years, the projected life of the technology. For these reasons, Removal is selected as the only remedial action which is cost-effective and will assure long-term protection of human health and the environment. Table 3 summarizes the information presented in this document regarding the various alternatives.

IX. OPERATION AND MAINTENANCE

Projected O&M for removal, as for all of the alternatives, is an initial one year period of grounds maintenance. This would include caring for surface vegetation, doing preventative work on any surface water drainage systems, and taking care of erosion problems to assure that revegetated areas become properly established. A fence will also be utilized for the first year after remedial alternative implementation. The fence will help to ensure that the vegetation is not disturbed while becoming established. The total present worth of these O&M activities is $7,000.

Table 3

SUMMARY OF REMEDIAL ACTION ALTERNATIVES

ALTERNATIVE DESCRIPTION	ESTIMATED PRESENT VALUE COST	PUBLIC HEALTH CONCERNS	ENVIRONMENTAL CONCERNS	TECHNICAL CONCERNS	INSTITUTIONAL CONCERNS	OTHER
NO ACTION	NONE	Unacceptable exposure to metals through dust inhalation or soil ingestion	Continued release of contaminated surface water and adverse impact on wildlife habitat and vegetation resources	None	Does not comply with either CA state or Federal requirements	
CAPPING Partial demolition of structures; construction of a clay and synthetic cover over contaminated soil	$921,705 (O&M = $32,000)	Public health risk reduced; no human contact with contaminated soil or water if cap is secure	Reduced releases of contaminated water or soil; some contaminated spring water may surface on the site; wildlife habitat and vegetation resources improved	Proven technology; easy to construct; there is a possibility spring water may contact contaminated material and subsequently migrate offsite	May not be completely RCRA compliant because of possibility of offsite migration of contaminated water or soil	Utilizes RCRA compliant multi-layer cap design; requires permanent land-use restrictions
REMOVAL Complete structure demolition and burial; excavation and disposal of contaminated soil at a RCRA approved Class I landfill; backfill excavation with clean soil	$3,072,338 (O&M = $7,000)	Public health risk eliminated; offsite disposal eliminates possibility of human contact	Eliminates releases of contaminated water or soil; wildlife habitat and vegetation resources improved	Proven technology; very effective; easy to construct	Would be designed to comply with both Federal and State environmental laws	Removal of hazardous material to a RCRA approved facility; allows use of the land for other purposes
ENCAPSULATION Complete structure demolition and burial; excavation of contaminated soil; construction of an encapsulation cell onsite; backfill excavation with clean soil	$1,201,837 (O&M = $32,000)	Public health risk reduced; no human contact with contaminated soil or water if encapsulation cell is secure	Reduced releases of contaminated water or soil; some contaminated spring water may surface on the site; wildlife habitat and vegetation resources improved	Proven technology; effective; moderately difficult to construct, there is a possibility spring water may contact contaminated material and subsequently migrate offsite	May not be completely RCRA compliant because of possibility of offsite migration of contaminated water or soil	Utilizes double bottom liner and multi-layer cap; requires permanent land-use restrictions

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X. SCHEDULE

• Approve Remedial Action (ROD)	September 1985
• Start Remedial Design	November 1985
• Complete Remedial Design	March 1986
• Enter State Superfund Contract	March 1986
• Start Remedial Construction	April 1986
• Complete Remedial Construction	July 1986
• Start Delisting Process	July 1986
• Delist Site from NPL	December 1986

XI. FUTURE ACTIONS

Once a remedial action is selected and sufficient funding is available, EPA will enter into Interagency Agreements with the USACE for design and construction of the selected alternative. Remedial design should take approximately four months and should be completed in March, 1986. Construction of the selected alternative will take approximately three months and should be completed in July, 1986. When construction of the selected alternative is completed, the delisting process will be commenced. Delisting of the site from the NPL is anticipated to occur in December, 1986.

GLOSSARY

BIA	- United States Bureau of Indian Affairs
CAM	- California Assessment Manual
CDC	- United States Centers for Disease Control
CERCLA	- Comprehensive Environmental Response Conservation and Liability Act of 1980 ("The Superfund")
C.F.R.	- Code of Federal Regulations
CWA	- Clean Water Act, as amended in 1977
DOI	- United States Department of Interior
DOHS	- State of California Department of Health Services
DOT	- United States Department of Transportation
DWRs	- Primary or Secondary Drinking Water Regulations (or MCLs) of the SDWA
GWPS	- EPA Ground Water Protection Strategy
HVBC	- Hoopa Valley Business Council
IHS	- United States Indian Health Service
IRM	- Initial Remedial Measure
MCLs	- Maximum Contaminant Levels (or DWRs) of the SDWA
mg/kg	- Milligrams per kilogram (or ppm)
NCP	- National Oil and Hazardous Substances Contingency Plan
NPL	- National Priorities List
O&M	- Operations and maintenance
OSHA	- United States Occupational Safety and Health Administration
ppb	- Parts per billion (or ug/L)
ppm	- Parts per million (or mg/kg)
RCRA	- Resource Conservation and Recovery Act, as amended in 1984

ROD - Record of Decision

RWQCB - State of California Regional Water Quality Control Board

SDWA - Safe Drinking Water Act, as amended in 1977

TTLC - CAM Total Threshold Limit Concentration

ug/L - Micrograms per liter (or ppb)

USACE - United States Army Corps of Engineers

WQCAL - EPA One Hour National Ambient Water Quality Criteria for Protection of Freshwater Aquatic Life, as promulgated under the CWA

WQCHH - EPA National Ambient Water Quality Criteria for Protection of Human Health, as promulgated under the CWA

COMMUNITY RELATIONS
RESPONSIVENESS SUMMARY

CELTOR CHEMICAL WORKS SITE
HOOPA, CALIFORNIA
September 1985

INTRODUCTION

The purpose of this Responsiveness Summary is to document the following items for the public record: (1) the concerns and issues raised by private citizens and governmental agencies during the remedial planning process, (2) comments and questions raised during the public comment period on the Feasibility Study, and (3) the response of EPA to these comments and concerns.

COMMUNITY RELATIONS ACTIVITIES

The community relations activities that were undertaken to inform interested parties and solicit their comments throughout the Remedial Investigation (RI) and Feasibility Study (FS) are summarized below.

The primary interested party has been the Hoopa Valley Business Council, which represents the Hoopa Valley Indian Tribe. The Council has had ongoing communications with the involved government agencies since the site was first identified in 1981. These agencies include the Indian Health Service (IHS), Humboldt-Del Norte County Health Department, California Department of Health Services (DOHS), and EPA. In addition to the meetings listed below, the Hoopa Valley Business Council has been in contact with DOHS, EPA, and EPA's contractor by telephone and letter.

- April 1, 1982: DOHS notified Hoopa Valley Business Council that the Celtor site was a candidate state Superfund site.
- July 6, 1982: EPA met with Hoopa Valley Business Council staff to discuss the status of several hazardous waste disposal sites on the Indian reservation.
- April-September 1982: Numerous meetings were held among Hoopa Valley Business Council staff, DOHS, and EPA to discuss applicability of the federal Superfund to Indian lands.

- September 1982: DOHS notified Hoopa Valley Business Council that the site was being considered for the federal Superfund list.

- November 3, 1982: DOHS and EPA met with the Hoopa Valley Business Council to propose a joint federal and state enforcement approach to get a voluntary responsible party cleanup at the site. IHS and the North Coast Regional Water Quality Control Board also attended the meeting.

- April 28, 1983: EPA, DOHS, IHS, and Humboldt-Del Norte County Health Department attended a meeting with the Hoopa Valley Business Council to discuss possible site response alternatives.

- June 1983: A meeting was held among EPA, DOHS, and the Hoopa Valley Business Council to discuss the Initial Remedial Measure (IRM) Feasibility Study.

- June 1983: Interviews were conducted with involved agencies and representatives of the Hoopa Valley Business Council. The purpose of the interviews was to identify concerns and information needs for use in designing the Community Relations Plan.

- August 1983: EPA held a public meeting to discuss the IRM Feasibility Study; issued a press release; sent a summary of the IRM Feasibility Study and a meeting notification to the project mailing list; and established information repositories where the IRM Feasibility Study Report and future documents could be reviewed. Approximately 17 people attended the public meeting.

- November 1983: EPA issued a press release announcing approval of the IRM.

- December 1983: Tribal representatives reviewed the completed onsite IRM work.

- September 1984: EPA met with Hoopa Valley Business Council staff to discuss the proposed RI/FS workplan and community relations activities. Representatives from the Bureau of Indian Affairs (in Hoopa) and the Humboldt-Del Norte County Health Department also attended the meeting.

- November 1984: EPA sent a fact sheet to the project mailing list to present the content and

schedule of the RI/FS. The RI/FS work plan was made available for review at the information repositories.

- November 1984: Community relations staff conducted followup interviews for use in updating the Community Relations Plan. Hoopa Valley Business Council staff reviewed the draft plan before it was made final.

- May 1985: EPA met with the Hoopa Valley Business Council chairperson and staff to discuss the Remedial Investigation Report (April 1985) and discuss preliminary alternatives to be considered in the Feasibility Study.

- June 1985: EPA sent a fact sheet to the project mailing list to summarize the findings of the RI, present the final alternatives included in the FS, and announce the FS public comment period and public meeting. A notice of the FS comment period and meeting was placed in the Eureka Times and the Klamath Courier.

- June 28-July 19, 1985: The public comment period for the Feasibility Study was held. A public meeting to discuss the FS was held on July 11, 1985.

CONCERNS RAISED PRIOR TO THE FEASIBILITY STUDY COMMENT PERIOD

A number of common issues and concerns were raised prior to the Feasibility Study comment period by the Hoopa Valley Business Council, the IHS, and the Humboldt-Del Norte County Health Department. These are summarized below, followed by the EPA response.

1. Health Effects from Direct Human Exposure to Contaminants: Concern was raised about open access to the site. Children and motor bikers were using the site, and some people were using it as a waste dump. In addition, the access road was commonly used to reach a fishing spot on the Trinity River.

   Response: Direct exposure to contaminated soil in the road and pasture area was reduced by implementation of the Initial Remedial Measure (IRM). The main plant area has been fenced and posted to limit access to remaining contaminated soils. Implementation of the remedial action will further reduce possible exposure to contamination.

2. Impact on Nearby Areas: Concerns about possible impacts of the site on nearby areas have included:

   - Contaminated dust blowing from the site and the access road onto an adjacent HUD housing development known as Norton Field.

     Response: See Response No. 7 under Concerns Raised During the Feasibility Study Comment Period.

   - Impacts on grazing cattle in an adjacent field from contaminated soil, possible offsite migration of contaminated surface water, and ingestion of potentially contaminated grasses.

     Response: See Response No. 12 under Concerns Raised During the Feasibility Study Comment Period.

   - Use of contaminated soil from the Celtor site as fill on HUD housing developments.

     Response: See Response No. 8 under Concerns Raised During the Feasibility Study Comment Period.

3. Impacts on Drinking Water: Concern was expressed that contaminants from the site might be entering area groundwater and contaminating local wells.

   Response: The Hoopa public water system is upgradient of the site. No private wells are located downgradient. Furthermore, based on the findings of the Remedial Investigation, local groundwater is not contaminated.

4. Impacts on the Trinity River: There was concern that contaminated surface water runoff or groundwater could reach the Trinity River. This was of particular concern to the Hoopa Tribe because the river is the tribe's only fish resource.

   Response: The primary groundwater resource in the area is a gravel aquifer that lies between 20 and 60 feet below the ground surface of the site. Testing during the Remedial Investigation showed that the gravel aquifer is free from contamination. Thus, contamination does not appear to be entering the Trinity River via groundwater.

Results of the Remedial Investigation indicate that contaminated surface water is leaving the site and entering the Trinity River. However, the dilution factor is so high--anywhere from a ratio of 500:1 (parts river water: part gully water) to a ratio of 5,000:1--that contaminants are diluted below detectable concentrations and appear to have no impact on the river's water quality. Even in a "worst case" scenario (where river dilution was at its lowest extreme and a "first flush" of the gully by a localized storm caused a concentrated contaminant discharge into the river), river water quality would be unlikely to exceed EPA 24-hour National Ambient Water Quality Criteria for Protection of Freshwater Aquatic Life.

5. Location of the Site in the Floodplain: Concern was expressed that the site is located in the floodplain of the Trinity River. If flooding occurred during the rainy season, contaminants could be carried into the river and downstream areas.

   Response: It was determined during the Feasibility Study that the main plant site area is above the 100-year floodplain. A minor portion of the site (the pasture and lower gully area) is located within the 100-year floodplain. The remedial action for the site will address this concern by reducing all sources of contamination within the 100-year floodplain. For further discussion of this issue, see the section titled "Summary of Remedial Alternative Selection: Consistency with Other Environmental Laws" in the Record of Decision (September 1985).

6. Onsite versus Offsite Remedial Actions: During the IRM Feasibility Study, Hoopa Valley Business Council representatives indicated a general tribal preference for offsite disposal rather than encapsulation or disposal on reservation lands. The Hoopa Valley Business Council also stated its preference for offsite disposal as the permanent remedial action.

   Response: Excavation and offsite disposal of contaminated soils was implemented as the IRM, and is also the recommended final remedial action.

7. Additional Sampling and Testing: The Hoopa Valley Business Council requested in February 1984 that EPA include specified sampling locations in the post-IRM site testing. The Council has also requested that testing be performed to identify the white precipitate that has formed in some locations following the IRM and to

determine the composition of odors that are sometimes present at the site.

Response: In response to the February 1984 request, additional sampling locations were included in the Remedial Investigation.

Testing has been conducted to determine the composition of the precipitate and of site odors. (See Response Numbers 5 and 6 under Concerns Raised During the Feasibility Study Comment Period.)

8. Employment Opportunities for Tribal Members: The Hoopa Valley Business Council was concerned that employment opportunities be provided for tribal members where possible during onsite work. If employment restrictions exist, the reasons should be provided.

Response: Because of Superfund program requirements, only subcontractors who have completed an extensive health and safety training program can work onsite where contamination is present. For this reason, jobs such as drilling cannot be subcontracted to the Tribe. However, the security work during the onsite Remedial Investigation work was subcontracted to the Tribe, and will also be subcontracted to the Tribe during implementation of the remedial action.

An explanation of employment restrictions because of health and safety requirements was included in the November 1984 fact sheet distributed to the project mailing list.

CONCERNS RAISED DURING THE FEASIBILITY STUDY COMMENT PERIOD

The public comment period on the draft Feasibility Study Report began June 28, 1985, and ended July 19, 1985. A public meeting was held on July 11, 1985, and was attended by ten persons. Nine individuals or agencies submitted comments or questions at the public meeting or in writing. A list of those who commented is attached.

The comments and questions are summarized below by subject and are followed by the response from EPA.

Comments Concerning the Cleanup Criteria

1. Comment/Question: The Hoopa Valley Business Council submitted the following comments concerning the cleanup criteria for the site:

"The cleanup criteria established for cadmium and arsenic soil concentrations are based on information from the Centers for Disease Control and other Superfund sites. The effects of long-term, low-level exposure on humans of such carcinogens have not been sufficiently determined. To insure adequate protection, cleanup levels for these substances should be set at background levels.

"The Feasibility Study Report indicates that adequate protection of the environment will be achieved in part by insuring that surface water discharges do not exceed the Federal Drinking Water Standards. The drainage leaving the plant area may support amphibians and other freshwater life if restored to its original condition. Water Quality Criteria for Aquatic Life should therefore be used as a standard when stricter than the drinking water standard."

Response: The cleanup criterion for in-soil arsenic (100 ppm) is based on studies conducted by the Centers for Disease Control evaluating the long-term effects of arsenic exposure in a residential area, and on the EPA Primary Drinking Water Regulations. The criterion for in-soil cadmium (25 ppm) was extrapolated from the EPA Primary Drinking Water Regulations and was based on cleanup levels at other Superfund sites. These criteria are conservative, based on an ingestion rate of up to 10 grams of soil per day for children and up to 0.1 gram per day for adults over a period of 70 years. The cleanup criteria for all contaminants found at the site are equivalent to or stricter than the California Assessment Manual (CAM) standards, and are consistent with cleanup levels used at other Superfund sites. EPA considers cleanup of the Celtor site to these criteria to be sufficient for the protection of public health and the environment.

Water flow in the drainage channel leaving the site is sporadic and probably cannot support fish or other aquatic life. There are no existing guidelines specifying the allowable metal intake levels for other animals that may drink the water. Removal of the contaminated soil will reduce the source of metals to established cleanup levels, and the runoff water quality will be substantially improved, probably approaching the pre-mining water quality.

2. Comment/Question: One person asked if the site could be used for recreational or other activities after cleanup to the action levels.

Response: With treatment or removal to the action levels, the site would be safe for all uses, including residential. With encapsulation, future uses of the land would be restricted. For example, it would not be possible to build structures that require foundation work or any other subsurface disturbance. However, the site would be covered with clean soil and regrassed, and recreational uses would be possible.

Comments Concerning the Remedial Alternatives

3. Comment/Question: Three comments concerned the preferred remedial action.

A Hoopa resident expressed concern that the treatment alternative has not been sufficiently tested. The site area provides the only access to the river and has the potential for high recreational use. He believes that people will have doubts about the area's safety if treated soil is redisposed onsite; this psychological factor is important to consider.

The Bureau of Indian Affairs, Sacramento Area Office, submitted a written comment supporting the removal alternative.

The Hoopa Valley Business Council submitted the following comments, including a proposed alternative that was not included in the Feasibility Study Report:

"While the treatment alternative will reduce the threat to human health and the environment and reduce the volume of material sent to a Class I landfill, the experimental nature of the process and the presence of residual contaminants in treated soil make the alternative less desirable than removal. This process has been utilized at only two other sites and Celtor is not considered an appropriate location for further development of the method. In addition, as with any such process, some contaminants and extraction material residues will remain in the treated soil that would be returned to the site.

"The removal alternative will involve replacement of contaminated material with clean soil containing only background levels of heavy metals and no by-products of the treatment process. There are no uncertainties involved with the removal alternative such as unforeseen problems which could occur with the still experimental treatment method. Compared to treatment, removal would

minimize the threat to human health and the environment, take less time to implement and be less costly. Our preferred alternative is, therefore, removal and replacement.

"Although not considered in the Feasibility Report, an alternative that removes the contaminated soil and replaces it with clean fill could be combined with limited treatment. Once removed from the Celtor area, contaminated soils could be subjected to a limited treatment to bring heavy metal concentrations below hazardous levels. All treated soils could then be hauled to a Class II landfill with hazardous waste or sludge removed to a Class I site as in the treatment alternative. This approach would address concerns regarding the experimental nature of the process and residual soil contaminants as well as reduce the volume of material to be sent to a Class I landfill."

Response: Further laboratory and field testing has been conducted to determine the feasibility and cost of implementing the treatment alternative at the Celtor site. Results of the testing showed that treatment would not be adequately effective at this site. Therefore, excavation and offsite disposal is the recommended remedial alternative.

Treatment, which has been shown to be ineffective, combined with removal would be more costly than removal alone. This combined alternative could therefore not become the cost-effective remedial action.

4. Comment/Question: The Hoopa Valley Business Council also submitted the following comment concerning site cleanup:

"Since neither the concrete pads nor the soils beneath the concrete have been tested, concentration of contaminants should be determined for each prior to final action in these areas. Material not meeting the criteria identified above [see Comment No. 1] should be removed with other hazardous soils."

Response: Both the concrete and the underlying soils will be tested to ensure that all contaminated material above the site-specific action levels is removed.

Comments Concerning Site Conditions

5. Comment/Question: One commenter expressed concern about the formation of a white crystalline substance in

the field next to the plant site area. It appears that this substance appeared only after the soil excavation performed during the Initial Remedial Measure (IRM). What is this substance; will it be tested ? Is it preventing vegetation from growing in the field? If not all the contamination is removed from the site during the remedial action, won't this substance continue to form and recontaminate the clean soil?

Response: The white precipitate seen in the field was not present when onsite sampling was performed during the Remedial Investigation. At the time of the public meeting, its composition was unknown. Tests had been taken of a similar white precipitate that had formed on the road. This was found to contain high levels of copper, zinc, cadmium, arsenic, and iron, similar to the levels found in soil samples from the site.

EPA has since sampled and tested the precipitate in the field to determine its composition. Test results are not yet available.

When contaminated soil was excavated and replaced with clean soil during the IRM, provision was made for the property owner to reseed the field. However, reseeding has not yet been done. The absence of grass does not necessarily mean that the field is incapable of supporting vegetation; it may be because the field has not been reseeded. Also, the portion of the field that is denuded is in a low-lying area that is often flooded during the winter months. This flooding may also be preventing vegetation from growing.

Further formation of the white precipitate should be controlled by the cleanup action. If it should occur after the cleanup action is implemented, EPA will determine if further response is needed.

6. Comment/Question: Two commenters were concerned about the odors that periodically occur at the site. Although EPA's air sampling detected nothing, it was conducted when odor was at a very low level. One of the commenters asked if the odor is toxic.

Response: EPA conducted extensive onsite air sampling over a 2-day period during conditions when odors are normally present. Nothing was detected during this period. Because of resource limitations, it was not possible to wait at the site until odors returned. If the odors are coming from contaminants at the site, they should be significantly reduced after site cleanup.

It is not possible to tell at this time if the odor is toxic. Normally, sulfur odors are not hazardous unless they are very strong and exposure is long-term.

Comments Concerning Exposure to Contaminants

7. Comment/Question: One commenter asked if people have been exposed to contaminated dust raised by traffic along the road. Are people living near the site still being exposed to contaminated dust from the site or the road, or to contamination that has been carried to the housing areas by drainage from the site? Is this possible exposure a health threat?

   Response: Before the IRM was implemented, it is possible that people were exposed to contaminated dust raised by traffic along the road. However, limited exposure to the levels and types of contaminants found on the road is not likely to have presented a health hazard. The placement of gravel on the road during the IRM has reduced this source of exposure.

   Soil sampling and testing has indicated that contaminants are not present further up the road. Drainage patterns carry runoff from the site away from the housing areas. It is unlikely that contamination originating on the site migrates into these areas. During implementation of the cleanup alternative, testing will continue to ensure that all contaminated soils above the site-specific action levels are identified and removed.

   It is unlikely that people living near the site are currently being exposed to levels of contaminated dust that would present a health hazard. Predominant wind patterns are to the north, away from the housing area. In addition, the large number of trees between the site and the housing area would act as a screen to limit dust exposure.

8. Comment/Question: One commenter asked if contaminated soil from the site area was used as fill on some of the housing developments.

   Response: In response to this concern, the Indian Health Service conducted soil investigations in April 1984 at HUD housing developments, both on the reservation and in the Hoopa Valley. No contaminated soils were discovered.

9. Comment/Question: One commenter asked who is responsible if people become ill from exposure to contamination.

Response: Under the Superfund legislation, the federal government is not liable for health impacts caused by exposure to hazardous wastes at a Superfund site. It is also very difficult to determine if health problems result from exposure to hazardous materials at a site, or from other causes or exposures. The purpose of the Superfund program is to respond to potentially hazardous situations that have been discovered and to prevent any further possible exposure to hazardous levels. This is being achieved at the Celtor site by the IRM and the permanent cleanup action.

EPA has identified a potentially responsible party at the Celtor site and is conducting negotiations to determine the full extent of this party's liability. Once the negotiations are concluded, the responsible party would appear to be the only source of economic redress for illness caused by exposure to site contamination.

10. Comment/Question: One commenter asked about possible health effects to her and her children from picking berries in contaminated areas over the period of two summers.

Response: It is unlikely that this amount of exposure, either from eating berries or from contact with dust, would result in any long-term health impacts. Any exposure to acid runoff that may have occurred would have been apparent at the time because it would have burned the skin upon contact or soon after contact.

11. Comment/Question: One commenter asked if the road and the drainage areas leaving the site should be posted to prevent people from using these areas.

Response: The only area that continues to present a potential health hazard is the main plant site, which has been fenced and posted. Dust emissions from the road have been reduced by the gravel laid down during the IRM. The pasture area has been covered with approximately 1-1/2 feet of clean soil. Contaminated soil in the gully is practically inaccessible because of the vegetation.

The water leaving the site in the ditches by the pasture and in the gully does contain contamination levels

above EPA Primary and Secondary Drinking Water Regulations. However, this would be a health threat only if people were to drink large quantities of water (2 liters per day) over a long period of time. Because this is very unlikely, EPA does not consider it necessary to post these areas.

12. Comment/Question: One commenter asked if cattle become contaminated from grazing or drinking in the field; does this affect their meat and present a human health threat?

    Response: Before the IRM, cattle may have been eating contaminated grass in the field or drinking contaminated water. EPA asked the property owner if they could examine the liver of any cattle that died, since the liver would show the highest concentrations of contaminants. The only specimen they received was a stillborn calf, whose liver showed no contamination. It is not possible to tell if any cattle were affected in the past.

    Since the field was excavated during the IRM and new soil was deposited, no grass has been growing; therefore, cattle are no longer grazing in contaminated areas of the pasture.

Other Comments

13. Comment/Question: One commenter asked if EPA will attempt to recover funding for the cleanup action from the responsible party.

    Response: EPA has identified a potentially responsible party at the Celtor site and is conducting negotiations to determine the financial obligations of this party.

14. Comment/Question: One commenter felt that people had not been sufficiently informed about hazardous conditions at the site and their possible exposure to contamination.

    Response: EPA has attempted to inform all interested parties of its activities at the site. This has been done through public meetings, newspaper ads, fact sheets, information repositories, and contact with representatives from the Hoopa Valley Business Council. EPA regrets any lack of communication that may have occurred, and encourages people to contact either the Hoopa Valley Business Council representative or EPA if they have any questions about the site or wish to be added to the mailing list to receive future information.

15. Comment/Question: The Hoopa Valley Business Council commented that the Tribal Employment Rights Ordinance (T.E.R.O.) requires utilization of the local Native American labor force within the Hoopa Square to the maximum extent possible. The T.E.R.O. officer should be contacted before finalization of any subcontract provisions.

Response: See Response No. 8 under Concerns Raised Prior to the Feasibility Study Comment Period.

The T.E.R.O. officer will be contacted to discuss subcontracting provisions.

REMAINING CONCERNS

Two concerns remain that will require EPA attention during implementation of the remedial action:

- Identification and control of the white precipitate that has formed in some site areas if it is determined to be hazardous (see Response No. 5 under Concerns Raised During the Feasibility Study Comment Period)
- Hiring of local Native American labor force where possible (see Response No. 8 under Concerns Raised prior to the Feasibility Study Comment Period)

LIST OF COMMENTERS

Commented at Public Meeting July 11, 1985

Dale LeMieux, Tribal Environmental Department
George Kalisik, Tribal Environmental Department
Dale Riesling, Community Member
Arden McCovey, Community Member
Deserrie McCovey, Community Member
Dan Jordan, Community Member
Del Robinson, Bureau of Indian Affairs, Hoopa

Submitted Written Comments

Bureau of Indian Affairs, Sacramento Office
Hoopa Valley Business Council

Hoopa Valley Business Council
P.O. Box 1348 • Hoopa, California 95546 • (916) 625-4211

HOOPA VALLEY TRIBE
Regular meetings on 1st & 3rd
Thursdays of each Month

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July 18, 1985

Nick Morgan
Toxics and Waste Management Division
U.S. EPA (T-4-3)
215 Fremont Street
San Francisco, CA 94105

Dear Mr. Morgan:

This letter is being sent in response to the June 28, 1985 Feasibility Study Report for the Celtor Chemical Works "Superfund" site. The comments presented below are concerned primarily with alternative actions and cleanup objectives.

ALTERNATIVES

As indicated in our July 10, 1985 letter, we agree with the EPA's decision not to support the encapsulation alternative. Hydrologic and geologic conditions, restrictions on future land use, monitoring and maintenance requirements, and the finite, unproven life of the lining material make this alternative unacceptable.

As you stated at the recent community meeting in Hoopa, of the three final alternatives (encapsulation, removal, and treatment) your agency has chosen treatment as the preferred action. While the treatment alternative will reduce the threat to human health and the environment and reduce the volume of material sent to a Class I landfill the experimental nature of the process and the presence of residual contaminants in treated soil make the alternative less desireable than removal. This process has been utilized at only two other sites and Celtor is not considered an appropriate location for further development of the method. In addition, as with any such process, some contaminants and extraction material residues will remain in the treated soil that would be returned to the site.

The removal alternative will involve replacement of contaminated material with clean soil containing only backgound levels of heavy metals and no by-products of the treatment process. There are no uncertainties involved with the removal alternative such as unforseen problems which could occur with the still experimental treatment method. Compared to treatment, removal would minimize the threat to human health and the environment, take less time to implement and be less costly. Our preferred alternative is, therefore, removal and replacement.

Although not considered in the Feasibility Report, an alternative that removes the contaminated soil and replaces it with clean fill could be combined with limited treatment. Once removed from the Celtor area, contaminated soils could be subjected to a limited treatment to bring heavy metal concentrations below hazardous levels. All treated soils could then be hauled to a Class II landfill with hazardous waste or sludge removed to a Class I site as in the treatment alternative. This approach would address concerns regarding the experimental nature of the process and residual soil contaminants as well as reduce the volume of material to be sent to a Class I landfill.

CLEANUP CRITERIA

Page seven of the Feasibility Study Report indicates that adequate protection of the environment will be achieved in part by insuring that surface water dishcharges do not exceed the Federal Drinking Water Standards. The drainage leaving the plant area may support amphibians and other freshwater life if restored to its original condition. Water Quality Criteria for Aquatic Life should therefore be used as a standard when stricter than the drinking water standard.

The cleanup criteria established for cadmium and arsenic soil concentrations are based on information from the Centers for Disease Control and other Superfund sites. The effects of long-term, low-level exposure on humans of such carcinogens has not been sufficiently determined. To insure adequate protection, cleanup levels for these substances should be set at background levels.

OTHER CONCERNS

Since neither the concrete pads nor the soils beneath the concrete have been tested, concentration of contaminants should be determined for each prior to final action in these areas. Material not meeting the criteria identified above should be removed with other hazardous soils.

Finally, the Tribal Employment Rights Ordinance (T.E.R.O.) requires utilization of the local Native American labor force within the Hoopa Square to the maximum extent possible. James Colegrove, T.E.R.O Officer, should be contacted at 916-625-4211 prior to finalization of any subcontract provisions.

I hope these comments will be useful. Thank you once again for your continued cooperation.

Sincerely,

Wilfred K. Colegrove

Wilfred K. Colegrove, Chairman
Hoopa Valley Business Council

cc: Del Robinson, BIA
Noel Palmer, I.H.S.
Bill Strickland, Humboldt County Public Health
Don Knapp, BIA

IN REPLY REFER TO
Land Operations

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
Sacramento Area Office
2800 Cottage Way
Sacramento, California 95825

JUL 23 1985

Mr. Nicholas Morgan
Toxics and Waste Management Division
Environmental Protection Agency
215 Fremont Street, T-4-3
San Francisco, California 94105

Dear Mr. Morgan:

We have reviewed the executive summary for the Draft Feasibility Study of June 28, 1985 for the Celtor Chemical Works. We support the Alternative No. 3B-Removal at an estimated cost of $3.1 million.

Please send a copy of the Draft Feasibility Study.

Sincerely,

Area Director